

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

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|--------------|--|---------------------|---------------------------|
| Applicant:   | Kevin J Conner   | Attorney Docket No. | H0001551<br>(HONE-1-1001) |
| Serial No.:  | 09/917,392   | Group Art Unit:     | 2672                      |
| Filing Date: | July 27, 2001  | Examiner:           | HARRISON, C.              |
| Title:       | METHOD, SYSTEM, AND COMPUTER PRODUCT FOR PERFORMING<br>TRAPEZOIDAL REDUCTION OF POLYGONS AND INTERRUPTED<br>POLYGONS |                     |                           |

RESPONSE TO OUTSTANDING OFFICE ACTION  
TO THE COMMISSIONER OF PATENTS:

In the Claims:

1. (Currently Amended): A method for rendering an image to ~~available display area based on parameters of~~ one or more unusable display areas of a clipped display window, the method comprising:

determining one or more trapezoids, ~~wherein the trapezoids define for defining all of the available display area~~ one or more unusable display areas of the clipped display window based on the parameters of the one or more unusable display areas;

generating an image;

determining location of components of the generated image relative to the determined one or more trapezoids; and

rendering the components of the generated image that are determined to be located within the one or more trapezoids.

2. (Currently Amended): The method of Claim 1, wherein determining the one or more trapezoids comprises:

- a) generating lines that define a boundary around ~~the available display area~~ all of the one or more unusable display areas;
- b) eliminating all lines being parallel to a predefined scan line direction;
- c) setting a first flag for each line to the lines maximum coordinate in a first axial direction, the first axial direction being orthogonal to the scan line direction;
- d) sorting the remaining lines into a list according to a sorting scheme;
- e) generating a trapezoid based on the first two lines in the list and the next highest flag value of all the flags;
- f) replacing the flag of the first and second lines with the next highest flag;

- g) if the first flag for the first or second line is equal to the minimum coordinate of the respective line on the axis orthogonal to the scan line direction, eliminating that line; and
  - h) repeating d-g until all lines are eliminated.
3. (Original): The method of Claim 2, wherein sorting comprises:
- setting a second flag for each line to a coordinate associated with the first flag in a second axial direction, the second axial direction being orthogonal to the first axial direction;
  - wherein the sorting scheme places lines with the highest first flag value first in the list and if lines have the same first flag value, place the line with the lower second flag value first in the list.
4. (Original): A computer program product for performing the method of Claim 1.
5. (Original): A computer program product for performing the method of Claim 2.
6. (Original): A computer program product for performing the method of Claim 3.
7. (Currently Amended): A system for rendering an image to ~~available display area based on parameters of~~ one or more unusable display areas of a clipped display window, the system comprising:
- a means for rendering an image to ~~available display area~~ the one or more unusable display areas of the clipped display window based on parameters of one or more unusable display areas, the ~~means for rendering computer program product~~ comprising:
    - a means for determining one or more trapezoids, ~~wherein the trapezoids define for defining all of the available display area~~ one or more unusable display

areas of the clipped display window based on the parameters of the one or more unusable display areas;

a means for generating an image;

a means for determining location of components of the generated image relative to the determined one or more trapezoids; and

a means for rendering the components of the generated image that are determined to be located within the one or more trapezoids.

8. (Currently Amended): The system of Claim 7, wherein the means for determining the one or more trapezoids comprises:

a means for generating lines that define a boundary around ~~the available display area~~  
all of the one or more unusable display areas;

a means for eliminating all lines being parallel to a predefined scan line direction;

a means for setting a first flag for each line to the lines maximum coordinate in a first axial direction, the first axial direction being orthogonal to the scan line direction;

a means for sorting the remaining lines into a list according to a sorting scheme;

a means for generating a trapezoid based on the first two lines in the list and the next highest flag value of all the flags;

a means for replacing the flag of the first and second lines with the next highest flag;

if the first flag for the first or second line is equal to the minimum coordinate of the respective line on the axis orthogonal to the scan line direction, a means for eliminating that line; and

a means for repeating until all lines are eliminated.

9. (Original): The system of Claim 8, wherein the means for sorting comprises:

a means for setting a second flag for each line to a coordinate associated with the first flag in a second axial direction, the second axial direction being orthogonal to the first axial direction;

wherein the sorting scheme places lines with the highest first flag value first in the list and if lines have the same first flag value, place the line with the lower second flag value first in the list.

10. (Currently Amended): A system for rendering an image to ~~available display area based on parameters of~~ one or more unusable display areas of a clipped display window, the system comprising:

a first component configured to render an image to ~~available display area based on parameters of~~ one or more unusable display areas of the clipped display window, the ~~first component computer program product~~ comprising:

a first subcomponent ~~second component~~ configured to determine one or more trapezoids, ~~wherein the trapezoids define for defining all of the available display area~~ one or more unusable display areas of the clipped display window based on the parameters of the one or more unusable display areas;

a second subcomponent ~~third component~~ configured to generate an image;

a third subcomponent ~~fourth component~~ configured to determine location of components of the generated image relative to the determined one or more trapezoids; and

a fourth subcomponent ~~fifth component~~ configured to render the components of the generated image that are determined to be located within the one or more trapezoids.

11. (Currently Amended): The system of Claim 10, wherein the first subcomponent means for determining comprises:

- a generating component configured to generate lines that define a boundary around the available display area all of the one or more unusable display areas;
- an eliminating component configured to eliminate all lines being parallel to a predefined scan line direction;
- a first flag component configured to set a first flag for each line to the lines maximum coordinate in a first axial direction, the first axial direction being orthogonal to the scan line direction;
- a sorting component configured to sort the remaining lines into a list according to a sorting scheme;
- an image ~~means~~-component configured to generate a trapezoid based on the first two lines in the list and the next highest flag value of all the flags;
- a second flag component configured to replace the flag of the first and second lines with the next highest flag;
- if the first flag for the first or second line is equal to the minimum coordinate of the respective line on the axis orthogonal to the scan line direction, an eliminating component configured to eliminate that line; and
- a repeating component configured to repeat until all lines are eliminated.

12. (Original): The system of Claim 11, wherein the sorting component comprises:

a setting component configured to set a second flag for each line to a coordinate associated with the first flag in a second axial direction, the second axial direction being orthogonal to the first axial direction;

wherein the sorting scheme places lines with the highest first flag value first in the list and if lines have the same first flag value, place the line with the lower second flag value first in the list.

## REMARKS

Claims 1-12 are pending. The outstanding Office Action rejected Claims 1-12 under 35 U.S.C. § 102. By way of this amendment, Applicant hereby amends Claims 1, 2, 7, 8, 10, and 11. Pursuant to 37 CFR § 1.111, Applicant hereby respectfully requests reconsideration of the application.

### Rejection of claims under 35 U.S.C. § 102

The Final Office Action rejected Claims 1-12 as being anticipated by Malachowsky et al. (hereinafter Malachowsky). The Final Office Action states that Malachowsky discloses determining one or more trapezoids for defining the available display area based on the parameters of the one or more useful display areas, generating an image, determining location of the components of the image relative to the trapezoids and rendering the generated image that are determined to be located within the trapezoids. Applicant respectfully traverses this rejection.

Applicant submits that Malachowsky discloses a method for quickly generating graphics for display using only a single output display buffer. Malachowsky performs rapidly displaying quadrilateral images by handling only information regarding the four vertices of quadrilaterals that make up subportions of the image. Malachowsky breaks the quadrilaterals into subportions to be presented on a display (col. 2-3, lines 52-2). Malachowsky further discloses that if a shape to be decomposed lies only partially within the clipped window, portions of the image outside the clip need not be processed (col. 3, lines 3-18). Applicant submits that Malachowsky is performing graphical decomposition of the image that is to be displayed, but does not perform a graphical decomposition of the display area – determining one or more trapezoids, wherein the trapezoids define all of the one or more unusable display areas of the clipped display window.

Malachowsky shows in FIGURE 1 that a graphical shape to be displayed is divided into two quadrilaterals which when individually displayed on a computer output device provide the complete original shape. Applicant submits that this original shape is the shape of the image desired to be displayed, but is not the shape of the available display area/clipped window (col. 5,



lines 26-36). The available display area of Malachowsky is the clip window, which is a standard rectangular window. Because the display area is a rectangular window, there exists no motivation for determining trapezoids that define the display area based on unusable display areas. Malachowsky defines the image and not the area where the image is to be displayed. Therefore, Malachowsky fails to teach or suggest determining one or more trapezoids that define all of the one or more unusable display areas of the clipped display window and rendering the components of the generated image that are determined to be located within the one or more trapezoids. Therefore, Applicant submits that amended independent Claims 1, 7, and 10 are allowable over the cited reference. Because Claims 2-6, 8, 9, 11, and 12 depend from allowable independent claims, they are allowable for the same reasons that make their corresponding independent claims allowable.

### CONCLUSION

Applicant respectfully submits that all of the claims of the pending application are now in condition for allowance over the cited references. Accordingly, Applicant respectfully requests withdrawal of the rejections, allowance, and early passage through issuance. If the examiner has any questions, the examiner is invited to contact the Applicant's agent listed below.

Respectfully submitted,

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